

Accuracy of Clinical Diagnosis of Burst Appendix, a Study of 200 Cases in DMCH.

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Abstract

Introduction: Acute appendicitis is the most common surgical emergency. If Simple acute appendicitis progress to perforation, then it is associated with a much higher morbidity and mortality. This study is aimed to evaluate the accuracy of clinical diagnosis of burst appendix. **Materials and Methods:** This observational study was carried out in the department of surgery, Dhaka Medical College Hospital, Dhaka, from January 2012 to December 2012. Total 200 cases of suspected burst appendicitis were included in this study. **Results:** Among the 200 cases of suspected burst appendix patients, majority of the cases 48% were of 25 – 34 years age group, 29.5% were of 15 – 24 years age group, 13% were of 35 – 44 years age group and other age group patients were few in number. Most of the cases 71% were male and 29% were female. Higher income group of patients are less sufferer 8%, middle income group and lower income group of patients are more sufferer 59% and 33% respectively. Depending on clinical features accuracy of clinical diagnosis of burst appendix is 76.5%. Diagnostic accuracy in male 78.17% and in female 72.41%. Total patients of confirmatory burst appendix was 153. 111 were male and 42 were female. Male and female ratio was 2.64:1. Diagnostic accuracy 77.9% in 15-24 years age group, 92.7% in 25-34 years age group, 50% in 35-44 years age group, 35.72% 45-54 years age group and 0% in >54 years age group of study population. **Conclusion:** Burst appendix present a challenge to the clinicians because there may be delay in diagnosis, as a result, delay in operation and may develop fatal complications. Surgeons have therefore been inclined to operate when the diagnosis is probable rather than wait until it is certain.

Keywords: Burst appendix.

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Introduction:

The appendix is a small, finger-shaped organ in the right lower quadrant of the abdomen. Acute appendicitis is the most common abdominal surgical emergency in the world¹ which is treated with surgical intervention². It is caused by obstruction of appendix lumen with fecalith, which will lead to bacterial colonization, inflammation, ischemia and progress to perforation³.

One of the major reasons for the perforation of the appendix is the delay in diagnosis and treatment of the acute appendicitis². Delay in surgical intervention has been associated with increased rate of perforation from 3% in patients operated within 24 h of presentation to 31% in patients operated at 36 h⁴. Usually, the perforation may happen after 36 hours of the onset of symptoms but a slight majority of patients with a perforated appendicitis present more than 48 hours after symptom onset⁵. This is a life-threatening condition, as bursting of the appendix can result in spread of the infection in the entire abdomen. So, surgery is indispensable and should be performed without any unnecessary delay⁶. However, appendectomy can be complicated⁷ after the perforation of the appendix, as compared to the surgery which is performed to remove an inflamed appendix which is intact and infected. The mortality rate of non perforated appendicitis is <1%; however, perforated appendicitis carries a higher mortality rate of around 5%⁸. Furthermore, postoperative complication rates ranged between 10 and 19% for uncomplicated acute appendicitis and reaching 30% in cases of complicated acute appendicitis.

Materials and Methods:

This was observational study and carried out in the department of surgery, Dhaka Medical College Hospital, Dhaka, Bangladesh, from January 2012 to December 2012. Total 200 cases of suspected ruptured appendicitis were included in this study. We excluded children under the age of 15 years and Patients operated in the gynaecological department.

Some Operational definition, High income groups: Monthly income of guardian >20,000 taka. Middle income groups: Monthly income of guardian 10,000 - 20,000 taka. Low income groups: Monthly income of guardian <10,000 taka. Different types of variables evaluated like, Symptoms: Pain in abdomen, Nausea, Vomiting, Fever, Diarrhea, Anorexia, Abdominal distention, Duration of symptoms. Signs: General examination (Dehydration, Temperature, Pulse, BP). Abdominal examination: (Tenderness in RIF, Diffuse tenderness, Rebound tenderness, Pointing sign, Rovsing's sign, Psoas test, RIF muscle rigidity, Abdominal distention, Obliteration of liver dullness, Bowel sounds.) Rectal examination: (Tenderness on right side, Tenderness on recto-vesicel or recto-uterine pouch) Investigations: Laboratory findings, Plain x-ray abdomen, USG of whole abdomen. Operative findings: Site of perforation, Generalized peritonitis, Localized peritonitis, Localized abscess, Periappendiceal fluid collection, Extra luminal appendolith. Early postoperative complications: Fever, Wound infection, Pneumonia, Intra-abdominal abscess, Wound dehiscence Burst abdomen, Prolong paralytic ileus. Confounding variables: Age, Sex, Socioeconomic condition Nutritional status.

Detailed information were obtained in each case. Complete history was taken either from patients or accompanying attendants. Thorough physical examination were done. Relevant investigations and operation notes were collected. All the information was recorded in the fixed protocol. Collected data was classified, edited, coded and entered into the computer for statistical analysis by using SPSS.

Results:

Age group distribution of the study population, majority of the cases 48% were of 25 – 34 years age group, 29.5% were of 15 – 24 years age group, 13% were of 35 – 44 years age group and other age group patients were few in number.

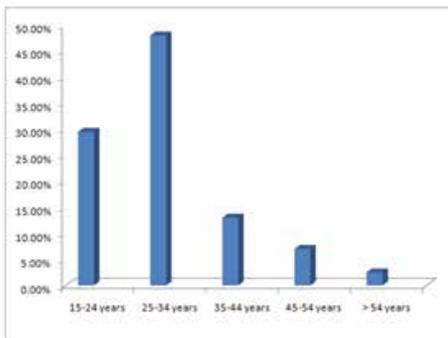


Figure-1: Age distribution of the study population.

Most of the cases 71% were male and 29% were female.

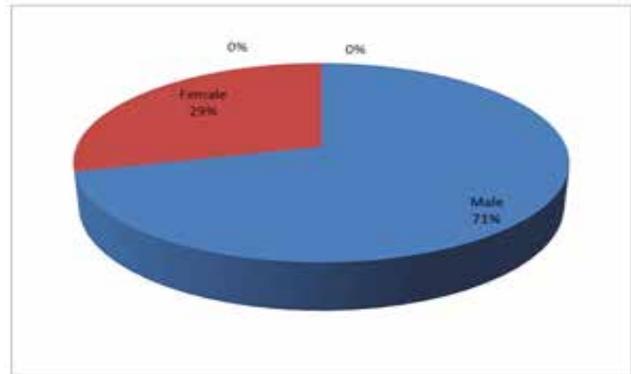


Figure-2: Sex distribution of the patients.

Socioeconomic status of the study population, 8% were from higher income group, 59% were from middle income group and 33% were from lower income group, classification was made from monthly income of guardian.

Table-I: Socioeconomic status of the patients.

Status	Numbers	Percentage
High income group	16	8%
Medium income group	118	59%
Low income group	66	33%
Total	200	100%

Burst appendix comprises 58.17% in the age group of 25-34 years and second peak of 30.06% in the age group of 15-24 years.

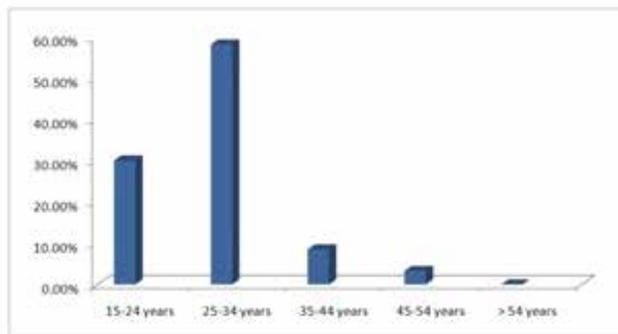


Figure-3: Age incidence of burst appendix.

Depending on clinical features accuracy of clinical diagnosis is 76.5%.

Table-II: Diagnostic accuracy.

Diagnosis	Number of Patients	Percentage
Correct Diagnosis	153	76.5%
Incorrect Diagnosis	47	23.5%
Total	200	100%

Diagnostic accuracy in male 78.17% and in female 72.41%. Total patients of confirmatory burst appendix were 153. 111 were male and 42 were female. Male and female ratio was 2.64:1.

Table-III: Diagnostic accuracy in relation to sex and male-female ratio of burst appendix.

Sex	Number of Patients	Correct of Diagnosis	Percentage	Male and Female of burst appendix
Male	142	111	78.17%	2.64:1
Female	58	42	72.41%	
Total	200	153		

Diagnostic accuracy 77.9% in 15-24 years age group, 92.7% in 25-34 years age group, 50% in 35-44 years age group, 35.72% 45-54 years age group and 0% in >54 years age group of study population.

Table-IV: Diagnostic accuracy in relation to age.

Age of the Patients	Number of Patients	Number of Correct Diagnosis	Percentage
15 - 24 years	59	46	77.9%
25 - 34 years	96	89	92.7%
35 - 44 years	26	13	50%
45 - 54 years	14	5	35.72%
> 54 years	5	0	0%
Total	200	153	

Discussion:

Acute appendicitis is the most common abdominal surgical emergency and grievous complication of acute appendicitis is burst appendix. The lifetime risk of acute appendicitis is estimated to be 8.6% for men and 6.7% for women⁹. Males are affected one and half more times than female¹⁰ while definite diagnosis could be done in 70–80% of patients¹¹. The diagnosis of ruptured appendix remains mostly on the basis of clinical manifestation as like acute appendicitis. The problem in making a clinical diagnosis of burst appendix is that in addition to appendicitis, there are other possible surgical and non-surgical causes of lower abdominal pain. The signs and symptoms associated with appendicitis have been found to have sensitivity between 16 and 100 percent and specificity between 36 and 95 percent¹². Differentiate between a perforated and a non-perforated appendix has been a matter of great debate since both have overlapping presentations. Extremes of ages, increasing duration of symptoms, pyrexia, tenderness outside right lower quadrant pain, leukocyte count, C-Reactive Protein levels, Erythrocyte Sedimentation Rate levels neutrophil to lymphocyte ratio and high bilirubin count were good predictors of perforation according to several studies. Inturn these parameters will provide a useful guide between the conservative or surgical treatment of appendicitis, and early use of antibiotics^{13,14}. Over the years several scoring systems have been devised to distinguish between these two entities. Various studies show CRP, neutrophil ratio, serum bilirubin CT scan to be very useful in the early and confident diagnosis of perforated appendicitis^{15,16}. However, all these modalities are expensive and mostly unavailable in emergency setups of third world countries. Therefore, the age-old tools of history taking and bedside examination remain extremely useful in picking up cases of perforated appendicitis. In their 2010 guidelines,

the American College of Emergency Physicians (ACEP) also recommends the use of clinical signs and symptoms in stratifying patients suspected of acute appendicitis¹⁷.

In this present series, I have studied only 200 cases of clinically diagnosed ruptured appendicitis and admitted in different surgical units of Dhaka Medical College hospital during the period from January 2012 to December 2012 about one year.

There had been many studies on the same and related subjects in home and abroad with various results. The following pages describe the comparative studies of the present study with other studies done in the century and elsewhere.

Figure 1 shows age group distribution of the study population, majority of the cases 48% were of 25 – 34 years age group, 29.5% were of 15 – 34 years age group, 13% were of 35 – 44 years age group and other age group patients were few in number.

Figure 2 shows that most of the cases 71% were male and 29% were female.

Table I shows socioeconomic status of the study population, 8% were from higher income group, 59% were from middle income group and 33% were from lower income group, classification was made from monthly income of guardian. It is generally believed that the lesser cellulose content of the diet may be related to the incidence of acute appendicitis. Enamul et al¹⁸ was reported, 72.73% of patients were from middle income group, 25.55% of patients were from high income group and 2.22% of patients were from low income group. In our country, because of urbanization, food habit also changing. They are taking less cellulose content diet. So incidence of acute appendicitis in other way burst appendix is increasing in middle and low income group people.

In table II, Patients suspected burst appendix underwent emergency operation and operative findings revealed burst appendix in 153 patients out of 200 patients. So diagnostic accuracy was 76.5% and diagnostic error in 23.5%. Our results correlates to Williams RF et al study¹⁹. Their diagnostic accuracy were 92%.

Table III shows diagnostic accuracy in male 78.17% and in female 72.41%. Total patients of confirmatory burst appendix was 153. 111 were male and 42 were female. Male and female ratio was 2.64:1. Our results are similar to Zambia is 1.6:1²⁰. Males are commoner than female. It may be delayed presentation of man due to hiding the symptoms at working place for fear of loss of job.

Table IV and figure 3 shows that diagnostic accuracy 77.9% in 15-24 years age group, 92.7% in 25-34 years age group, 50% in 35-44 years age group, 35.72% 45 - 54 years age group and 0% in >54 years age group of study population. Burst appendix comprises 58.17% in the age group of 25-34 years and second peak of 30.06% in the

age group of 15-24 years. Our results correlate to USA study²¹ and Deneke A²².

Conclusion:

From the results of the present study it can be concluded that the accuracy of clinical diagnosis of burst appendix is about 76.5%. The role of available emergency investigations in diagnosis of burst appendix is not significant. To ascertain the significance of this results and its role in management of burst appendix patients large and multicenter studies are required. Burst appendix present a challenge to the clinicians because it can delay in diagnosis, result in delay in operation and can develop fatal complications. So we emphasize on careful history taking and physical examination in such cases which will make the difference between life and death.

Conflict of Interest: None.

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